START

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ENGINEERING CHANGE NOTICE

Page 1 of 2

1. ECN 187144

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	4. Date
Supplemental [] Direct Revision [X] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void []	Gary D. Mickle CSS/MES 52660 S4-61 3-3408	
	5. Project Title/No./Work Order No.: 2101-M Waste Stream SAP/A2D89	6. Bldg./Sys./Fac. No.: 2101-M
	7. Impact Level: 3 EQ	
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.): WHC-SD-CP-PLN-014, Rev. 0	9. Related ECN No(s).: -----
	10. Related PO No.: -----	

11a. Modification Work	11b. Work Package No.	11c. Modification Work Complete	11d. Restored to Original Condition (Temp. or Standby ECN only)
[] Yes (fill out Blk. 11b) [X] No (NA Blks. 11b, 11c, 11d)	N/A	N/A Cog. Engineer Signature & Date	N/A Cog. Engineer Signature & Date

12. Description of Change

Complete Revision

13a. Justification (mark one)							
Criteria Change	[X]	Design Improvement	[]	Environmental	[]	As-Found	[]
Facilitate Const.	[]	Const. Error/Omission	[]	Design Error/Omission	[]		

13b. Justification Details

Revision is due to changes to the guideline document, WHC-SD-WM-QAPP-011, Rev. 2A

14. Distribution (include name, MSIN, and no. of copies)

See Distribution Sheet.

RELEASE STAMP

OFFICIAL RELEASE BY WHC

DATE DEC 01 1992

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A-7900-013-2 (06/92) GEF095
Engineering Change Notice

A-7900-013-1 (11/88)

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1)

15. Design Verification Required	16. Cost Impact				17. Schedule Impact (days)	
	ENGINEERING		CONSTRUCTION			
[] Yes	Additional	[] $	Additional	[] $	Improvement	[]
[X] No	Savings	[] $	Savings	[] $	Delay	[]

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]		[]
Environmental Report	[]	Inspection Plan	[]		[]
Environmental Permit	[]	Inventory Adjustment Request	[]		[]

19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision

20. Approvals

	Signature	Date		Signature	Date
OPERATIONS AND ENGINEERING			ARCHITECT-ENGINEER		
Cog Engineer	Gary D. Mueller	11/16/92	PE		
Cog. Mgr.	[illegible]	11-17-92	QA		
QA D.G. Farwick	D.G. Farwick	11/16/92	Safety		
Safety			Design		
Security			Environ.		
Environ.	[signature]	11-18-92	Other		
Projects/Programs	[signature]	11/12/92			
Tank Waste Remediation System					
Facilities Operations			DEPARTMENT OF ENERGY		
Restoration & Remediation			Signature or Letter No.		
Operations & Support Services					
IRM			ADDITIONAL		
Other : Sampling & Mobile Laboratories		11/16/92	Liquid Effluents P.E	[signature]	11/16/92
~~Technical Agent for~~ Chemrisk-Berger		11/16/92			
HASM : Michelle Hendrix					

JKS 12/01/92

SUPPORTING DOCUMENT

1. Total Pages 21 22

2. Title	3. Number	4. Rev No.
2101-M WASTE STREAM SAMPLING AND ANALYSIS PLAN	WHC-SD-CP-PLN-014	1

5. Key Words

2101-M SAP

APPROVED FOR PUBLIC RELEASE
W. Bickland 11/25/92

6. Author

Name: for Gary D. Mickle

Signature 11-25-92

Organization/Charge Code 52660 / A2D89

7. Abstract

The 2101-M SAP provides sampling objectives, responsibilities, sample identification, equipment, procedure requirements, and sampling requirements for the 2101-M waste stream.

8. PURPOSE AND USE OF DOCUMENT - This document was prepared for use within the U.S. Department of Energy and its contractors. It is to be used only to perform, direct, or integrate work under U.S. Department of Energy contracts. This document is not approved for public release until reviewed.

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9. Impact Level 3EQ

10. RELEASE STAMP

OFFICIAL RELEASE BY WHC DATE DEC 01 1992 STA 4

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Rev 1

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RECORD OF REVISION	(1) Document Number WHC-SD-PLN-014	Page ALL

(2) Title
2101-M Waste Stream Sampling and Analysis Plan

CHANGE CONTROL RECORD

(3) Revision	(4) Description of Change - Replace, Add, and Delete Pages	Authorized for Release	
		(5) Cog. Engr.	(6) Cog. Mgr. Date
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2101-M WASTE STREAM SAMPLING AND ANALYSIS PLAN

CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF TERMS

BWIP	Basalt Waste Isolation Project
HEIS	Hanford Environmental Information System
Liquid Effluent QAPP	*Liquid Effluent Sampling Quality Assurance Program Plan*
OSM	Office of Sample Management
RCRA	*Resource Conservation and Recovery Act of 1976*
SAP	Sampling Analysis Plan
Tri-Party Agreement	*Hanford Federal Facility Agreement and Consent Order*
WAC	*Washington Administrative Code*
WHC	Westinghouse Hanford Company

2101-M WASTE STREAM SAMPLING AND ANALYSIS PLAN

A. SAMPLING OBJECTIVES

A.1 INTRODUCTION

This plan establishes the guidelines for the sampling and analysis of the 2101-M Laboratory waste water. It identifies procedures and protocols to be followed to characterize the stream and to provide for monitoring of the waste water on a long-term basis. The information obtained from the sampling and subsequent analysis will be used to provide evidence of regulatory compliance. All liquid effluent characterization sampling will be performed according to approved written procedures. The procedures will comply with the requirements of the *Resource Conservation and Recovery Act of 1976* (RCRA) protocols published in the U.S. Environmental Protection Agency's SW-846, *Test Methods for the Evaluation of Solid Waste*, Physical/Chemical Methods, Volume 2, Chapter 9 (latest edition). Analysis of the samples will be performed using SW-846 protocols unless otherwise specified.

Quality assurance objectives for the sampling activities are described in WHC-SD-WM-QAPP-011, Rev. 2A, *Liquid Effluent Sampling Quality Assurance Program Plan* (Liquid Effluent QAPP) (WHC 1992).

The 2101-M Sampling and Analysis Plan (SAP) will be reviewed every 3 years and updated as needed to ensure its accuracy and completeness. All changes to this document shall be considered Class III changes to the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) (Ecology et al. 1990).

A.2 OBJECTIVES

The purpose of this plan can be divided into two distinct sections. Data obtained from the chemical analysis of the waste stream will initially be used to:

- Provide valid data to support a nondangerous waste designation for the 2101-M Laboratory waste stream
- Provide confirmatory data for the *Washington Administrative Code* (WAC) 173-240 engineering report to support the best available treatment economically achievable evaluations and liquid effluent treatment system design
- Provide data on chemical and radiological constituents to accurately calculate loading and rate of migration in order to support the assessment of impacts of continued discharge.

Over the long term, the sampling program will be used for monitoring purposes. Sampling is designed to confirm the waste designation for the 2101-M waste water stream.

B. SITE BACKGROUND

B.1 2101-M FACILITY HISTORY

The 2101-M Building is located in the 200 East Area of the Hanford Site. The building was originally constructed as one high-bay building complex used for fabrication and storage purposes. In past years, a portion of the building was converted to laboratory and office space. From 1981 through April 1988 a Basalt Waste Isolation Project (BWIP) laboratory occupied space in 2101-M. Currently, the 2101-M Building houses a spare parts storage area, a geologic sample storage area, an insulator shop, a high-efficiency particulate air filter test shop, a substation maintenance shop, an instrument maintenance shop, the Vent and Balance Group, the Solids Characterization and Barriers Laboratory, classrooms, and offices.

The only activity that has been significant from an environmental standpoint was the BWIP laboratory. The laboratory maintained an inventory that included dangerous chemicals. The laboratory's operations generated small quantities of waste water on an intermittent basis. No controls were in place to ensure that the chemicals used were not released to the waste stream that discharged to the pond. Small quantities of barium were released to the 2101-M Pond periodically from 1981 through July 1985 during BWIP's operations. Administrative controls were established in July 1985 to prohibit disposal of any dangerous wastes via the laboratory drains. Because the potential for releases to the pond existed during the period from 1981 through July 1985, the facility was designated as a RCRA Treatment/Storage/Disposal facility. The facility is currently permitted under interim status.

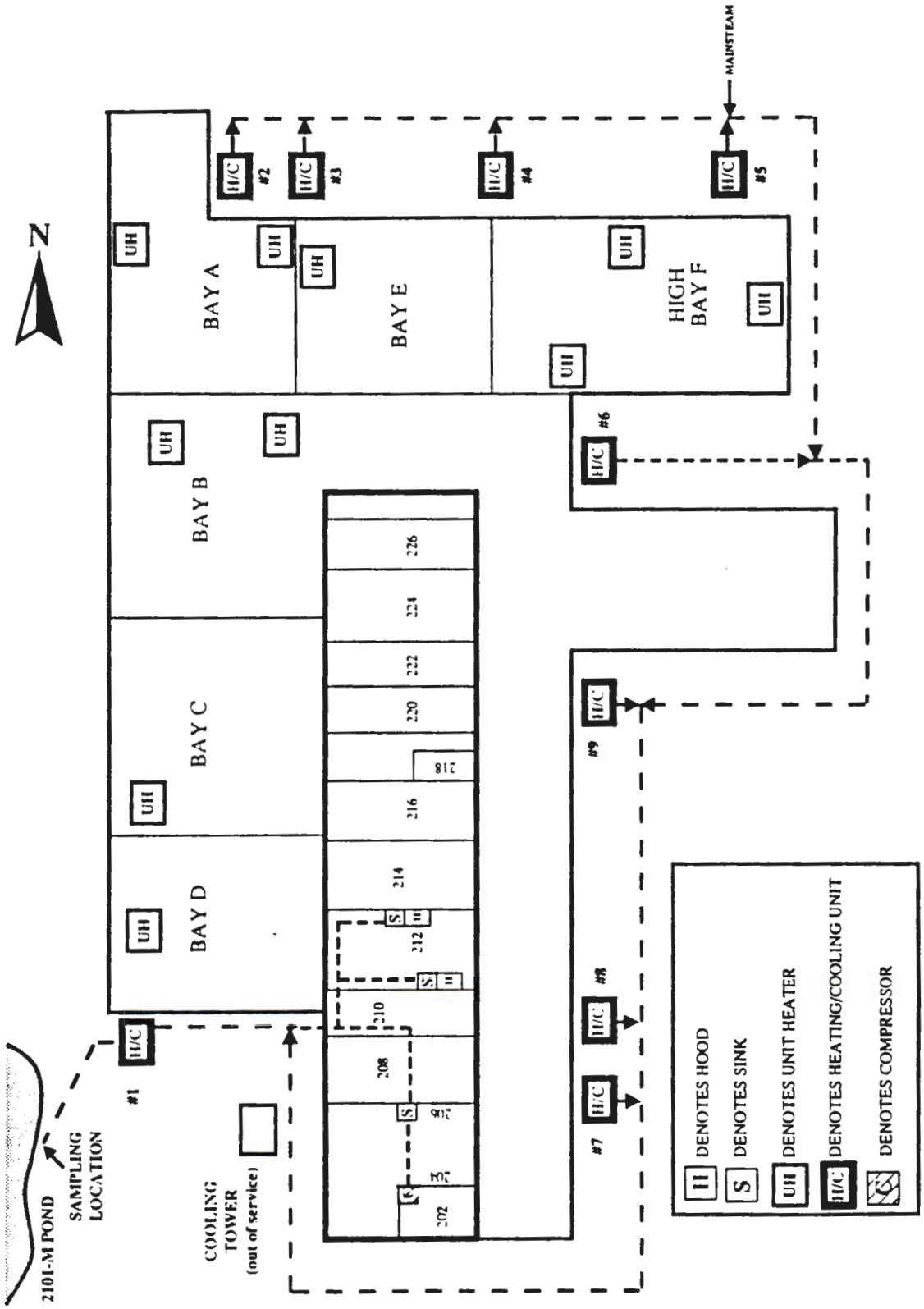
A Closure Plan was submitted for the 2101-M Pond in April 1987 (DOE/RL 88-41) (DOE-RL 1991). Initial soil sampling taken during Phase I of closure suggests that the concentrations of constituents found in the soil do not pose a threat to human health or the environment. Further sampling is being done during Phase II of closure to support this conclusion. If clean closure is achieved, the U.S. Department of Energy, Richland Field Office intends to continue to use the pond for the receipt of nondangerous waste water from the 2101-M Building (DOE/RL 88-41).

B.2 LIQUID EFFLUENT DESCRIPTION

Discharge leaves the 2101-M Building via a 10-cm (4 in.), cast-iron, ambient-pressure drain pipe located at the southwest corner of the building. The following are known sources from the 2101-M Building that contribute to the effluent: condensate from the heating system, the Buffalo cooling units reservoir overflow, compressed air condensate, and waste water from sinks in rooms 206 and 212. These waste introduction points are shown in Figure 1.

The stream flow rate fluctuates from 3.78 L (1 gal) per minute to 45.42 L (12 gal) per minute depending on the season and the associated temperature. This is due to the nature of the effluent (primarily steam condensate),

Figure 1. 2101-M Waste Stream Introduction Sources.



which is dependent on the steam demand required by the 2101-M Building. During the warmer months, flow may be reduced to a very low value. During the cold winter months the flow is high enough that it covers the end-of-pipe sampling location at times.

Past sampling and analysis results combined with process knowledge have indicated that the stream is nondangerous. Strict engineering and administrative controls are in place to ensure no chemicals are released to the drain which would be regulated, as defined under WAC 173-303-070. Detailed documentation of the above is provided in the *2101-M Laboratory Waste Water Stream Specific Report* (WHC-EP-0342, Addendum 18) (WHC 1990).

The Appendix to this plan provides additional details on each flow contributor, including a discussion on flow data and specific engineering and administrative controls that have been enacted in the past to ensure that the waste stream contains no regulated chemicals.

B.3 2101-M POND DESCRIPTION

The 2101-M Pond is the receiving site for the waste stream. It is a manmade, earthen, unlined, uncovered, U-shaped surface impoundment located approximately 100 m west of the 2101-M Building. Details of the pond layout can be found in the *2101-M Closure Plan* (DOE/RL 88-41) (DOE-RL 1991).

C. RESPONSIBILITIES

The 2101-M facility manager is responsible for the sampling and analysis of the waste water generated by the facility. In this regard, the facility manager or designee is responsible for the following:

- The completion and accuracy of this SAP
- Proper implementation of the SAP
- Designating the 2101-M waste water with the proper waste designation
- Coordinating the sampling activities with Environmental Protection and Safety. Specific tasks include ensuring that the correct sample point is used, facility safety guidelines are not compromised, appropriate equipment and skilled personnel are available for sampling, and all field work is done according to established procedures
- Coordinating the review and oversight of the waste stream characterization and sampling program with Environmental Protection and Quality Assurance
- Notifying Environmental Protection if the waste stream is designated as containing Dangerous Waste, as defined under WAC 173-303.

The following assignments are made to assist the facility manager in the execution of his responsibilities.

The Central Support Services' Maintenance Engineering Group (or other designee of the 2101-M facility manager) is responsible for the following:

- Preparing this SAP
- Scheduling sampling and sampling personnel in accordance with the frequency established in this plan
- Assisting with the waste stream designation process
- Distributing data results and maintaining a data file containing this SAP, copies of facility sampling records, waste water flow records, analytical results, and resulting reports
- Developing, initiating, dispositioning, and tracking nonconformance resolutions and corrective actions that arise as a result of a surveillance or audit activity.

The Processing and Analytical Laboratories Office of Sample Management (OSM) is responsible for the following:

- Identifying the contract laboratory to perform chemical analysis for this sampling and analysis plan
- Monitoring the analytical laboratory for quality performance
- Receiving and monitoring analytical laboratory data packages to ensure they are complete
- Validating analytical laboratory data packages and submitting them to Environmental Data Management Center
- Acting as an interface between the facility manager and the contract laboratory.

The Westinghouse Hanford Company (WHC) Sampling and Mobile Laboratories sampling team is responsible for the following.

- Take the appropriate number of samples, blanks, and other quality control indicators as specified by the user. This task also requires taking proper care and custody of the samples until the samples are transferred to the analytical laboratory.
- Ensure samples are representative.
- Maintain accurate and complete sampling records.
- Initiate a proper chain of custody for each sample.
- Ensure samples are properly packaged and shipped.

- Provide trained samplers for liquid effluent characterization sampling activities.
- Prepare the 2101-M waste water liquid effluent characterization sampling procedure.

The Environmental Protection Group is responsible for the following.

- Review the waste stream characterization and sampling program.
- Take appropriate action if a Dangerous Waste (as defined under WAC 173-303) is found in the waste stream.
- Coordinate tasks with the facility which relate to environmental protection.

D. SAMPLE LOCATION AND FREQUENCY

D.1 SAMPLE LOCATION

Sampling will take place at the point where the piping enters the surface impoundment. This point is downstream of all effluent contributors (past the last heating, ventilating, and air-conditioning unit), as shown in Figure 1. This sampling point will ensure that all possible sources affecting water quality are taken into account and that the sample is representative of the entire stream. The samples will accurately represent the concentration of contaminants in the waste water that is discharged to the Pond. If practical, as part of a future improvement, a catch basin will be installed to facilitate sampling and to allow for the capability to obtain flow rate data.

An analysis of the 2101-M Building waste water contributors was performed and is described in the Appendix to this SAP. This synopsis documents no sources of hazardous chemicals are discharged into the waste water from any source; therefore, the above sampling location is adequate to satisfy the objectives of this plan.

D.2 SAMPLE FREQUENCY

D.2.1 Initial Characterization

Initial characterization of the waste water will be accomplished to determine if any follow-up actions need to be taken as well as to quantify future sampling needs. Because of the seasonal fluctuations in the stream flow rate, two distinct sampling periods shall be defined. The winter period will be from November through March, and the summer period will be from April through October. In order to obtain representative samples for characterization purposes over two years, two samples shall be taken during each of the two sampling periods. These samples will be tested for inorganics, organics, and physical characteristics, as described in Section G

of this SAP. If samples cannot be obtained during the summer period because of the low flow condition, only the winter period data will be used to satisfy the initial characterization objectives.

D.2.2 Long-Term Monitoring

Based on historical data and process knowledge, no problem areas are expected (see Appendix). However, the initial analytical data will reveal what future analyses need to be performed, and a schedule will be developed, with the concurrence of the State and Federal Regulators, specifying both the analyses and frequency of sampling. Consideration will be given to fluctuations in constituent concentration and stream flow rate in the development of the schedule. If any condition or operating process changes that could adversely affect the sample results, additional sampling will be done.

D.2.3 Additional Sampling Requirements

Quality control samples such as field duplicate samples, field blanks, trip blanks, and equipment blanks will be taken during each sampling event as appropriate. (Equipment blanks may not be necessary depending on the dip sampler used). The duplicate samples and the blanks will be used to validate the laboratory data and to provide data quality indicators as outlined in the Liquid Effluent QAPP (WHC 1992).

Sampling will be performed two times per year due to seasonal fluctuations in stream flow (i.e., steam condensate in the winter and cooling water in the summer). All test runs will note which intermittent waste streams are discharging at the time samples are taken. The sampling activities will be initiated upon approval of this SAP and issuance of the 2101-M waste water liquid effluent characterization sampling procedure.

E. SAMPLE IDENTIFICATION

A unique sample number shall be provided for each sample. The unique sample number shall be obtained from the Hanford Environmental Information System (HEIS) or its equivalent.

The labels will require the following information to be recorded by a member from the sampling team: identification of the person in charge of collecting the sample, a unique sample identification number, date and time the sample was collected, the place the sample was collected, and the type of preservative used. In addition, each bottle shall be identified with a bar code sticker attached to the bottle by the bottle manufacturer. The bar code shall identify the bottle lot number and individual bottle number.

F. SAMPLING EQUIPMENT AND PROCEDURES

F.1 EQUIPMENT

Specific sampling equipment will be provided by the Sampling and Mobile Laboratories' sampling team and will be included in the 2101-M waste water sampling procedure.

Preventive maintenance of the Protocol sampling equipment is not necessary. Equipment calibrations by the 2101-M facility are not needed because sample bottles are the only equipment needed for sampling.

No flow monitoring equipment is used for the waste stream at this time. All volumes are estimated, as described in the Appendix to this SAP.

F.2 PROCEDURES

The Protocol sampling procedures are based on recommended practices found in SW-846, Chapter Nine, latest edition. All applicable health and safety precautions will be taken. Detailed sampling instructions will be defined in the 2101-M waste water sampling procedure. This procedure will be written upon approval of this SAP.

The sampling procedure will identify 2101-M waste water specific requirements, which include the following: (1) sampling location; (2) a description of sampling equipment, containers and reagents; (3) safety precautions, including personnel protective equipment; (4) specific steps for collecting a sample; (5) instructions for completing field notebook entries, sample labels, and sample chain-of-custody forms.

Field logs will be completed per the *Environmental Investigations and Site Characterization Manual*, WHC-CM-7-7, procedure EII 1.5, "Field Logbooks," for the sampling event.

G. SAMPLE HANDLING AND ANALYSIS

G.1 INITIAL CHARACTERIZATION

The chemical analytical protocols to be followed are given in Table 1. Containers and preservatives to be used in the sampling activity will be specified in the 2101-M waste water sampling procedure, per the Liquid Effluent QAPP.

In addition, ph, temperature and conductivity will be measured in the field and recorded in the field logbook.

Table 1. Table of Analyses

Method type*	Method title
6010	Inductively Coupled Plasma Atomic Emission Spectroscopy
7060	Atomic Absorption for Arsenic (Furnace Technique)
7421	Atomic Absorption for Lead (Furnace Technique)
7470	Atomic Absorption for Mercury (Cold Vapor Technique)
7740	Atomic Absorption for Selenium
7870	Atomic Absorption for tin
335.2	Total Cyanide
9030	Sulfides
8080	Organochlorine Pesticides and PCBs (GC Analysis)
8140	Organophosphorus Pesticides (GC Analysis)
8150	Chlorinated Herbicides (GC Analysis)
8240	GCMS for Volatile Organics
8270	GCMS for Semivolatile Organics (Capillary Column Techniques)
9020	Total Organic Halides
150.1	pH
160.1	Total dissolved solids

*EPA, latest edition, *Test Methods for Evaluating Solid Wastes*, SW-846, U.S. Environmental Protection Agency/Office of Solid Waste and Emergency Response, Washington, D.C.

GCMS = Gas Chromatography Mass Spectrometry.
GC = Gas Chromatography.
PCB = Polychlorinated biphenyl.

Sufficient historical data and process knowledge exist to confirm that none of the samples will be radioactive. For this reason, there is no need to perform a gross alpha, beta, or gamma analysis.

G.2 LONG-TERM MONITORING

The exact analyses to be performed will be determined and agreed upon by the State and Federal Regulators after characterization of the waste stream has taken place.

G.3 SAMPLE HANDLING

The samples will be collected in commercially available, certified, precleaned containers. The certification of the precleaned condition is traceable via the bar code that is attached to the bottle. The sample volumes and number of containers are prescribed by the analytical laboratory that will be performing the analyses and are subject to change. All preservatives are vendor supplied and added to the containers in a laboratory environment before being taken to the field.

Each sample container shall be labeled with the HEIS (or equivalent) sample number. The labels shall specify the sample identification number and WHC ownership.

A chain-of-custody form will be filled out at the time of bottle preparation to track the samples. Further details on the custody procedures can be found in Section J of this SAP.

Once the sample is drawn, the cap will be sealed to the container with a tamper-indicating type seal. The sample containers shall then be packaged in accordance with WHC-CM-7-7, EII 5.11, "Sample Packaging and Shipping." The samples will be refrigerated at 4 °C until ready to ship, at which time they will be placed in a cooler containing ice. The cooler is part of the sample packaging.

If the samples are destined for an offsite analytical laboratory, an aliquot shall be pulled for a Total Activity analysis so the samples can be released to their offsite destination. If the facility is exempt from this requirement, documentation showing this exemption will be provided to the samplers at the time of sampling. The 2101-M facility is not exempt at this time.

A logbook that contains information pertinent to the sampling shall be maintained by sampling personnel. Entries will include the following information: sampling point and method, sample identification number and container volume, sample matrix, names of all participants, and comments on any deviations from expected sampling methods or operations. Any changes shall be initialed and dated.

The samples shall be routed to an approved WHC participant contractor or subcontractor laboratory for analysis consistent with SW-846 requirements

(latest edition), including holding time considerations where applicable. The analysis may be conducted by a qualified onsite laboratory in lieu of offsite analysis.

H. STATISTICS

The data will be considered representative so long as at least 90 percent of the data points meet the established requirements in the Liquid Effluent QAPP for precision and accuracy. Data that do not meet this objective will be submitted to the customer by the OSM to determine whether the data can be used or whether corrective action should be taken. If necessary, corrective action will consist of repeating the sampling and analysis activity. All corrective action will be in accordance with Section 14 in the Liquid Effluent QAPP (WHC 1992).

Specific data quality objectives as well as data assessment procedures are stated in the the Liquid Effluent QAPP (WHC 1992).

I. QUALITY CONTROL

Internal quality control requirements are specified in Section 10.0 of the Liquid Effluent QAPP (WHC 1992).

J. CHAIN-OF-CUSTODY PROCEDURES

A preservative chain-of-custody form will be completed at the time of container preparation when preservatives are added to the container. A sample chain-of-custody form will accompany each container through the sampling process. A sample may consist of several containers. The chain of custody will account for each container. Once the sample has been drawn it must be in the physical control or view of the custodian, locked in an area where it can not be tampered with, or prepared for shipping with a tamper-indicating type seal applied. Physical control includes being in the sight of the custodian, being in a room that will signal an alarm when entered, or being locked in a cabinet. Upon transferring the samples to another location or group, the custodian shall sign when releasing the samples to the designated receiver. A bonded private carrier shall be used to transport the samples along with the chain-of-custody document.

The approved laboratory shall designate a sample custodian and a designated alternate responsible for receiving all samples. The sample custodian or his alternate shall sign and date all appropriate receiving documents at the time of receipt and at the same time initiate an internal chain-of-custody form using documented procedures.

Copies of the chain of custody are faxed to the OSM from the analytical laboratory to verify sample receipt. After analysis, record copies are forwarded to the OSM with the data package(s).

K. DOCUMENTATION CONTROL

Validated data will be sent to the Environmental Data Management Center by OSM. A copy will also be sent to the 2101-M facility manager. The data will become part of the Administrative Record for the Tri-Party Agreement milestones.

All sampling and analytical data and field notes will be maintained as quality records per *Quality Assurance Manual*, WHC-CM-4-2, QR 17.0. Copies of the sample analysis request form, chain of custody, and other pertinent shipping information (offsite property control documentation, bill of lading, cooler and sample numbers, and the total activity screening results) are forwarded to OSM by the sampling team. The original shipping papers accompany the samples and are retained by the laboratory.

L. REFERENCES

DOE-RL, 1991, *2101-M Pond Closure Plan*, DOE/RL 88-41, Rev. 1, U.S. Department of Energy, Richland Field Office, Richland, Washington.

Ecology, EPA, and DOE, 1990, *Hanford Federal Facility Agreement and Consent Order*, 2 vols., as amended, Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington.

EPA, latest edition, *Test Methods for Evaluating Solid Wastes*, SW-846, U.S. Environmental Protection Agency/Office of Solid Waste and Emergency Response, Washington, D.C.

Resource Conservation and Recovery Act of 1976, as amended, 42 USC 6901 et seq.

WAC 173-240, 1990, "Submission of Plan and Reports for Construction of Waste water Facilities," *Washington Administrative Code*, as amended, Washington State Department of Ecology, Olympia, Washington.

WAC 173-303, 1990, "Dangerous Waste Regulations," *Washington Administrative Code*, as amended, Washington State Department of Ecology, Olympia, Washington.

WHC, 1990, *2101-M Laboratory Waste Water Stream Specific Report*, WHC-EP-0342, Addendum 18, Westinghouse Hanford Company, Richland, Washington.

WHC, 1992, *Liquid Effluent Sampling Quality Assurance Program Plan*, WHC-SD-WM-QAPP-011, Rev. 2A, Westinghouse Hanford Company, Richland, Washington.

WHC-CM-4-2, *Quality Assurance Manual*, Westinghouse Hanford Company, Richland, Washington.

WHC-CM-7-7, *Environmental Investigations and Site Characterization Manual*, Westinghouse Hanford Company, Richland, Washington.

APPENDIX

ANALYSIS OF WASTE WATER CONTRIBUTORS

APPENDIX

ANALYSIS OF WASTE WATER CONTRIBUTORS

VENTILATION STEAM HEATING EQUIPMENT

Steam condensate is produced whenever the heating system is used in the 2101-M facility; the condensate is removed via the 35 steam traps in the building and enters the waste water stream. Steam requirements are met by using steam from the Hanford Site's 200 East Area steam power plant. Based on steam consumption data obtained from the power plant, an estimate of 1.892M L (500,000 gal)/month flow rate was calculated to be the maximum rate to exist during the cold winter months (WHC-EP-0342, Addendum 18)(WHC 1990). A maximum flow rate of 45.4 L (12 gal) per minute would exist for this source. An estimate of 12.7 L (3.36 gal) per minute for an annual average flow rate was determined by weighing steam consumption use for each month of the year. The flow from this source is essentially zero during the warmer months of the year; however, it is still the largest contributor to the waste water.

VENTILATION COOLING EQUIPMENT

The evaporative cooling units contribute to the waste water stream during the warmer months of the year. A continuous portion of the recirculating cooling water is discharged to the waste stream as overflow from the evaporative cooling system. This waste stream would normally contain the same dissolved solid contaminants present in the raw water but at a higher concentration due to the concentrating effect of the water evaporation. This air conditioning reservoir overflow contributes approximately 0.23 L (0.06 gal) per minute to the waste stream. Again, this is an annual average based on the seasonal use of the cooling units.

COMPRESSED AIR DISTRIBUTION SYSTEM

Condensate forms as the compressed air is cooled in the after-cooler and moisture separator. It is collected in a drip trap and is released to the waste stream as distilled water. This condensate is produced only when compressed air is being used and contributes a negligible amount to the waste stream.

LABORATORY AND ROOM SINKS

An operative sink drain exists in the Insulators' Shop, which is located in room 206 of the 2101-M facility. This sink is strictly used for purposes such as hand washing and as a water supply for the coffee mess. A sign is posted near the sink stating only water is to be discharged down the drain; bimonthly inspections are done by the Building Administrator to ensure compliance with this standard. Based on predicted use, an estimate of 0.11 L (.03 gal) per minute was obtained for this source.

A soils laboratory also occupies space in 2101-M and has sinks operating in room 212. This laboratory tests soil samples for the *Resource Conservation and Recovery Act of 1976* (RCRA) and *Comprehensive Environmental Response, Compensation and Liability Act of 1980* (CERCLA) groundwater wells that exist on Site. The laboratory has implemented administrative controls to ensure no regulated materials are released to the drains. Activity specific controls that outline proper handling of materials and testing procedures are maintained by the use of detailed, written procedures in the laboratories. Specific training is given to these employees working either with regulated materials or in areas where they may come into contact with them. In addition, signs near the sinks warn personnel not to dispose of regulated materials down the drains. Finally, inspections are done on a bimonthly basis to check selected operating activities for product and waste handling to ensure compliance. Based on predicted use, an annual average of 0.038 L (0.01 gal) per minute is estimated to flow to the 2101-M Pond from the laboratory sinks.

The flow rate from the operative sinks is not directly measured but has an estimated value based on water usage of no more than 378 L (100 gal)/month.

REFERENCES

Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, 42 USC 9601 et seq.

Resource Conservation and Recovery Act of 1976, as amended, 42 USC 6901 et seq.

WHC, 1990, *2101-M Laboratory Waste Water Stream Specific Report*, WHC-EP-0342, Addendum 18, Westinghouse Hanford Company, Richland, Washington.

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